

TWENTY FIRST CENTURY  
**science**

Module C4

CHEMICAL PATTERNS

Practice test

FOUNDATION

Name: .....

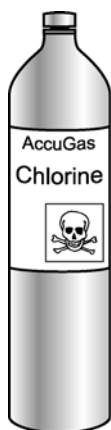
Form/teaching set: .....

**Answer all of the questions.**

**Write your answers in the spaces provided on this paper.**

**You will need a copy of the Periodic Table for this test.**

1 The diagram shows a container of chlorine.



(a) The container has the following hazard symbol on it.



What does this symbol mean?

Put a tick (✓) in the box next to the correct answer.

corrosive

harmful

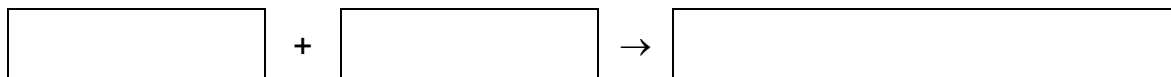
highly flammable

toxic

[1]

**(b)** Chlorine reacts with sodium to make sodium chloride.

Write the word equation for this reaction.



[1]

**(c)** Chlorine gas is used in swimming pools.

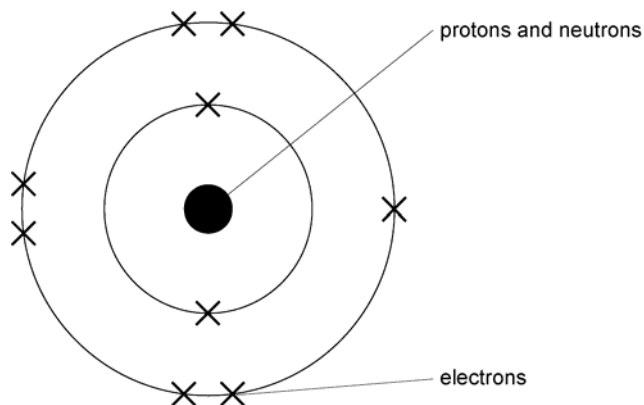
State why.

.....

[1]

[Total marks: 3]

2 This diagram represents an atom of fluorine.



(a) What is the name of the central part of an atom that contains the protons and neutrons?

..... [1]

(b) Which one of the following represents the electron arrangement of a fluorine atom?

Put a (ring) around the correct answer.

1.2.7    2.2    2.7    7.2 [1]

(c) In any neutral atom, the numbers of protons and electrons are the same.

How many protons are there in a neutral fluorine atom?

..... [1]

[Total marks: 3]

3 Sodium chloride has the formula NaCl.

It contains the ions Na<sup>+</sup> and Cl<sup>-</sup>.

(a) Which one of the following describes ions?

Put a tick (✓) in the box next to the best answer.

charged particles

liquids

neutral atoms

solids

[1]

(b) Finish the sentence about sodium chloride.

Choose the best word from this list.

**group    lattice    period    table**

Sodium chloride forms crystals because the ions are

arranged in a regular .....

[1]

(c) Compounds formed between elements in group 1 and group 7 always form ionic compounds.

Which one of the following is an ionic compound?

Put a ring around the **one** correct answer.

**Cl<sub>2</sub>    H<sub>2</sub>O    KBr    Li**

[1]

[Total marks: 3]

4 This question is about elements in the periodic table.

Find the elements lithium, sodium and potassium in the periodic table.

(a) What is the number of the group these elements are in?

.....

[1]

(b) Look at this information about the elements.

name	hardness	density in g/cm <sup>3</sup>	melting point in °C
lithium	fairly hard to cut with a knife	0.53	180
sodium	easy to cut with a knife	0.97	98
potassium	very easy to cut with a knife	0.86	64

(i) Describe any trends shown in the table going down the group from lithium to potassium.

.....  
.....  
.....  
.....  
.....  
.....  
.....

[3]

(ii) **Rubidium** is the element below potassium in this group.

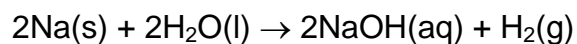
Which of the following is most likely to be the melting point of rubidium?

Put a ring around the correct answer.

40 °C    80 °C    150 °C    200 °C

[1]

(c) This equation shows the reaction between sodium and water.



(i) Write down the name of a **product** in this reaction.

..... [1]

(ii) What does the symbol (s) mean?

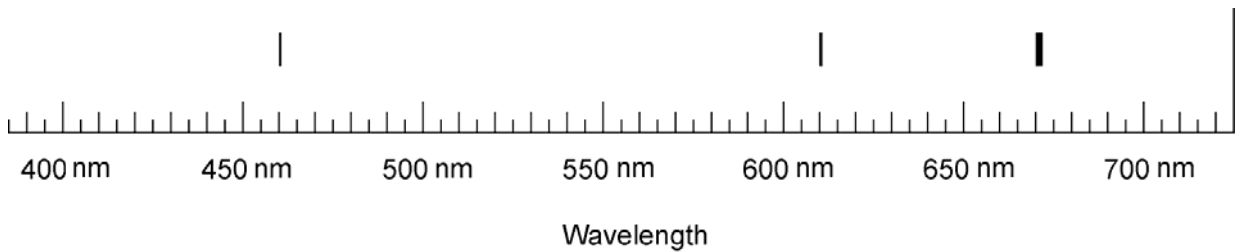
Put a **ring** around the correct answer.

**solid**      **sodium**      **solution** [1]

[Total marks: 7]

5 When lithium is heated in a Bunsen burner flame, it gives out a characteristic scarlet colour.

This can be represented by the line spectrum below.



The line spectra of all elements are different.

(a) What is emitted from a lithium atom to produce this characteristic colour?

Put a **ring** around the correct answer.

**heat    light    protons    sound** [1]

(b) The study of line spectra and other types of spectroscopy have been useful in the discovery of new elements.

Suggest why.

.....

.....

.....

..... [3]

[Total marks: 4]

[Total marks for the test: 20]

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Practice test

HIGHER

Name: .....

Form/teaching set: .....

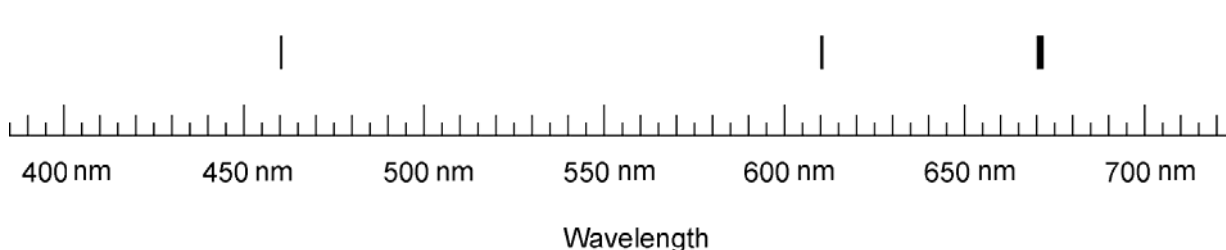
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**Write your answers in the spaces provided on this paper.**

**You will need a copy of the Periodic Table for this test.**

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**heat    light    protons    sound** [1]

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Suggest why.

.....

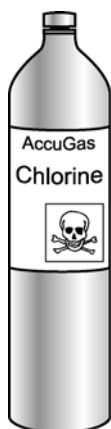
.....

.....

..... [3]

[Total marks: 4]

2 The diagram shows a container of chlorine.



(a) The container has the following hazard symbol on it.



What does this symbol mean?

.....

[1]

(b) Chlorine reacts with potassium to make potassium chloride.

Finish the balanced symbol equation for this reaction.



[1]

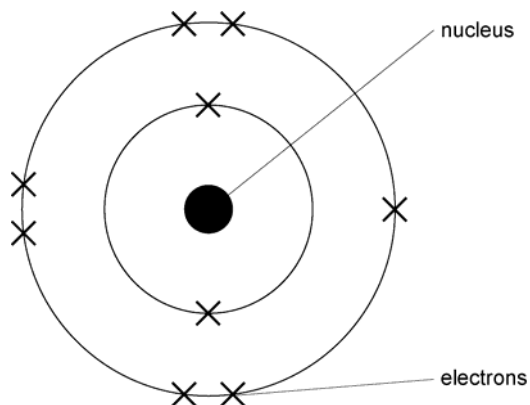
(c) What is the colour of chlorine gas?

.....

[1]

[Total marks: 3]

3 This diagram represents an atom of fluorine.



(a) Write down the **names** of the particles present in the nucleus of the atom.

..... and ..... [1]

(b) Write down the electron arrangement of a fluorine atom.

..... [1]

(c) How many protons are there in a fluorine atom?

..... [1]

[Total marks: 3]

4 Sodium chloride has the formula NaCl.

It contains the ions Na<sup>+</sup> and Cl<sup>-</sup>.

(a) Which one of the following describes ions?

Put a tick (✓) in the box next to the best answer.

charged particles

liquids

neutral atoms

solids

[1]

(b) Finish the sentence about sodium chloride.

Choose the best word from this list.

**charge    group    lattice    molecule    period**

Sodium chloride forms crystals because the ions are

arranged in a regular .....

[1]

(c) Compounds formed between elements in group 1 and group 7 always form ionic compounds.

Which one of the following is an ionic compound?

Put a ring around the correct answer.

**Cl<sub>2</sub>    H<sub>2</sub>O    KBr    Li**

[1]

[Total marks: 3]

5 Magnesium chloride is a white crystalline solid.

It contains the ions  $Mg^{2+}$  and  $Cl^-$ .

It is soluble in water and melts at  $714\text{ }^{\circ}C$ .

(a) What is the formula for magnesium chloride?

.....

[1]

(b) When magnesium chloride dissolves in water, the solution conducts an electric current.

Molten magnesium chloride also conducts an electric current.

Solid magnesium chloride does not conduct electricity.

Explain these facts.

.....

.....

.....

.....

.....

[3]

[Total marks: 4]

6 Potassium reacts with cold water.



(a) Name the gas that is given off in this reaction.

.....

[1]

(b) Write down the formula of the hydroxide that is left in the solution at the end of the reaction.

.....

[1]

(c) Write down the name of an element in group 1 that reacts more slowly with water than potassium.

.....

[1]

[Total marks: 3]

[Total marks for the test: 20]